

Baltimore and Ohio Railroad: Thomas Viaduct
Crossing the Patapsco River
Elkridge, Howard County
Relay, Baltimore County
Maryland

HAER No. MD-3

HAER
MD,
14-ELK,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D. C. 20240

HISTORIC AMERICAN ENGINEERING RECORD

HAER
MD,
14-ELK.
1-

Baltimore and Ohio Railroad: Thomas Viaduct

HAER No. MD-3

Location: Crossing the Patapsco River between Relay and Elkridge
Landing
Elkridge and Relay
Howard and Baltimore Counties
Maryland

Dates of Construction: 1833-1835

Builder/Designer: Benjamin H. Latrobe, II, engineer

Original Use: Railroad bridge

Current Use: Railroad bridge

Present Owner: Baltimore & Ohio Railroad

Significance: The first multi-span masonry railroad bridge in the U. S. and the first to be built on a curving alignment, the Thomas Viaduct was the largest bridge in the nation in its day, and was named for Philip E. Thomas, first president of the B & O.

The stone, Roman-arch bridge is divided into eight span. It was designed by Benjamin Henry Latrobe, II (son of the famous architect of the Capitol and the Basilica of the Assumption), then B & O assistant engineer, later chief engineer. It was built by John McCartney of Ohio under the supervision of Caspar Wever, the road's chief of construction. The main design problem to be overcome was that of construction on a curve: there would be variations in span and pier width between the opposite sides of the structure. This problem was solved by having the lateral pier faces laid out on radial lines, thus making the piers essentially wedge-shaped, and fitted to the 40° curve.

The viaduct is 612 feet long, each arch about 58 feet; height, 59 feet from water level to the base of the rail. The width at the top of the spandrel wall copings is 26 feet, 4 inches. The bridge is of rough-dressed Maryland granite ashlar, from Patapsco River quarries. A wooden-floored walkway, four feet wide and built for pedestrian and railway employee use, is supported upon cast iron brackets and is edged with ornamental cast iron railings.

Baltimore & Ohio Railroad:
Thomas Viaduct
HAER No. MD-3
(Page 2)

Significance, cont'd. In 1929, extensive pointing of the masonry was carried out, and in 1937 and 1938, major repairs were effected, including installation of a new drainage system. Nevertheless, the bridge is still indicative of the way in which, in the early days of the B & O, track and major structures were put down in the most permanent manner possible. The viaduct contains 24,476 cubic yards of masonry, and cost \$142,236.51.

The original B & O route followed the Patapsco River to Ellicott's Mills; later the "Washington Branch" was constructed. This new line branched at Relay, site of a former post-road hotel and changing point for stage horses. The main line was rerouted about 1870, and since then the viaduct has carried the railroad's full traffic between Washington and Baltimore. Although its ability to support even its own weight was widely doubted at the time of construction, it has since carried 300-ton diesel engines and heavy freight traffic. A B & O station and hotel at Relay was demolished ca. 1948.

To counteract deterioration of the masonry, the Thomas Viaduct underwent a "face-lifting" in 1938, performed by the Baltimore & Ohio Maintenance of Way Department. The work consisted primarily of improved facilities for drainage, relocation of loose arch ring stones, and the application of a grout mixture to the stone spandrel filling. At an unknown date, railing blocks were removed from the north side of the deck and a bracketed walkway added, giving more lateral clearance.

When the structure was completed, a fifteen-foot monument with the names of the builder, directors of the railroad, the architect (engineer), and others associated with the viaduct was erected at its east end by builder John McCartney. He also celebrated the completed work by having his men kneel on the deck of the viaduct, while baptizing them with a pint of whiskey.

Until after the Civil War, the B & O was the only railroad into Washington, and was used by Federal forces for supply trains, with heavy guards stationed along the viaduct.

Baltimore & Ohio Railroad:
Thomas Viaduct
HAER No. MD-3
(Page 3)

Little work had been done on the viaduct until the repairs of 1937-38 which, according to a 1949 report by the Chief Engineer of the B & O, would keep future maintenance to a minimum. The Thomas Viaduct remains as impressive today as at its completion, which marked the beginning of major American railway structures.

References:

Hungerford, Edward. Story of the Baltimore and Ohio Railroad.

Collection of B & O Material, University of Maryland, article by Margaret Talbot Stevens.

"Repairs to Stone Arch Viaduct of B & O Railroad at Relay, Maryland," September 14, 1939, author unknown.

Transmitted by:

Jean P. Yearby, 1984, from data compiled by Llewellyn Nathaniel Edwards, CE, in 1941.